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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/941,744	08/30/2001	Yoshihiro Nakajima	Q64096	7388

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SUGHRUE, MION, ZINN, MACPEAK & SEAS  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037

EXAMINER

GREENE, PERSHELLE L

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/941,744

Applicant(s)

NAKAJIMA ET AL.

Examiner

Pershelle Greene

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4, 12 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-3, 7-10, 13-15 and 21-25 is/are rejected.
- 7) ☒ Claim(s) 5-6, 11, 16, and 26-27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

NATHAN J. FLYNN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 08 October 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

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Serial Number: 09/941744  
Attorney's Docket #: Q64096

Filing Date: 08/30/2001

Applicant: Yoshihiro et al.  
Examiner: Pershelle Greene

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

As to claim 1, Williams et al. shows, in figure 19O, a semiconductor chip 462 having a plurality of electrodes. There are wiring materials 480 with a plurality of lead terminals 470. A metal plate 480 has a first and second main surface. The metal plate 480 is joined to the plurality of electrodes at a first portion and joined to a plurality of lead terminals 470 at a second portion. There is a molding resin 482, which seals the device. Williams et al. fails to explicitly show a roughened surface.

Seki et al. is cited for showing a semiconductor device with a mounting structure. Specifically, Seki et al. shows, referring to figures 16A-18, a roughened metal plate 16.

As to claim 2, Williams et al. discloses a metal plate connecting with the plurality of electrodes and the plurality of lead terminals. The metal plate alone can represent the metal plate and the plating on the metal plate.

As to claim 3, Williams et al. discloses a metal plate having at least one bent part between the first and second portion. The metal plate that connects the second portion represents the plating formed on the first and second portion.

As to claim 7, Williams et al. discloses metal lead terminals.

It would have been obvious to one of ordinary skill in the art to use the roughened surface of Seki et al. with the device of Williams et al. for the purpose of removing any parts of unwanted stacked layer structure.

3. Claim 8 and 21 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819), and further in view of Kuraishi et al. (U.S. Patent # 5,859,471).

Claim 8 is being rejected for the same reasons stated above in regard to claim 3. Williams et al. discloses all of the claimed subject matter with the exception of the plurality of lead terminals having a concave in which the metal plate and the concave are connected via a conductive bonding material.

Kuraishi et al. teaches the use of a lead terminal 20 with a stepped portion 18 in which the metal plate 34 is connected with the stepped portion via a solder resist 22. It would have been obvious to one of ordinary skill in the art to have the stepped portion to provide for easier attachment.

Claims 21 is **product-by-process claims**:

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

4. Claim 9 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Kuraishi et al. (U.S. Patent # 5,859,471), and further in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 9 is being rejected for the same reasons as stated above in regards to claim 8. However, these references do not teach the use of a roughened metal plate.

Seki et al. teaches the use of a metal plate with a roughened metal plate 16. The roughened surface allows you to increase the surface area of the external terminal. Therefore, it would have been obvious to one of ordinary skill in the art to use a metal plate with a roughened surface. The sandblasted surface is equivalent to a roughened surface. The way in which the surface is roughened does not affect the final structure.

5. Claim 10 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Kuraishi et al. (U.S. Patent # 5,859,471), and further in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 10 is being rejected for the same reasons as stated above in regards to claim 8. However, these references do not teach the use of a dimpled metal plate.

Seki et al. teaches the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate.

6. Claim 13 and 22 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Williams et al. discloses all of the claimed subject matter with the exception of the clawed parts.

Seki et al. teaches the use of clawed parts. The claw parts 19 provide support to the semiconductor device. It allows you the ability to mount the semiconductor device with increased reliability. The claw parts also reduce the cost of the device because there is not a need to form an independent part to form the claw part. Therefore, it would have been obvious to one of ordinary skill in the art to use leads with claw parts.

**Claims 22 is product-by-process claims:**

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Thorpe*, 227 USPQ 964, 966; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above case law makes clear. See also MPEP 2113.

7. Claim 14 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Claim 14 is being rejected for the same reasons as stated above in regards to claim 13. In addition, Seki et al. teaches the use of a metal plate with a roughened metal plate 255. The roughened surface allows you to remove any parts of the unwanted staked layer structure. Therefore, it would have been obvious to one of ordinary skill in the art to use a metal plate with a roughened surface. The sandblasted surface is equivalent to a roughened surface. The way in which the surface is roughened does not affect the final structure.

8. Claim 15 is being rejected under 35 U.S.C. 103(a) as being unpatentable over Williams et al. (U.S. Patent No. 6,307,755), in view of Seki et al. (U.S. Patent # 6,165,819).

Williams et al. discloses all of the claimed subject matter with the exception of the clawed parts and the dimpled metal plate.

Seki et al. teaches the use of clawed parts and the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate.

9. As to claim 23, Williams et al. shows, in figure 19O, a semiconductor chip 462 having a plurality of electrodes. There are wiring materials 480 with a plurality of lead terminals 470. A metal plate 480 has a first and second main surface. The metal plate 480 is joined to the plurality of electrodes at a first portion and joined to a plurality of lead terminals 470 at a second portion. There is a molding resin 482, which seals the device. Williams et al. fails to explicitly show a roughened surface.

Seki et al. is cited for showing a semiconductor device with a mounting structure. Specifically, Seki et al. shows, a roughened metal plate 16. Refer to column 16, lines 10-30.

It would have been obvious to one of ordinary skill in the art to use the roughened surface of Seki et al. with the device of Williams et al. for the purpose of increasing the surface area of the external terminal.

10. Claim 24 is being rejected for the same reasons as stated above in regards to claim 23.

However, these references do not teach the use of a roughened metal plate.

11. Claim 25 is being rejected for the same reasons as stated above in regard to claim 23.

Williams et al. discloses all of the claimed subject matter with the exception of the dimpled metal plate.

Seki et al. teaches the use of a dimpled metal plate 16-1. The dimpling of the metal plate increases the surface area of the plate as well as facilitating the coating of an adhesive agent on the terminal. Therefore, it would have been obvious to one of ordinary skill in the art to dimple the metal plate.

#### ***Allowable Subject Matter***

12. Claims 5-6, 11, 16, and 26-27 are being objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

13. Claims 4, 12, and 17 are allowed.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pershelle Greene whose telephone number is 703-305-3870. The examiner can normally be reached on M-F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on 703-308-6601. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

PLG  
June 26, 2003